

Standing, Reef Fish, Socioeconomic, Shrimp, and Ecosystem SSC Meeting Summary July 19 – 20, 2023

The meeting of the Gulf of Mexico (Gulf) Fishery Management Council's (Council) Standing, Reef Fish, Socioeconomic, and Ecosystem Scientific and Statistical Committees (SSC) was convened at 9:00 AM EDT on July 19, 2023. The agenda for this meeting was approved along with the minutes from the May 2023 SSC meeting. [Verbatim minutes from past SSC meetings can be reviewed here.](#)

Dr. Jim Nance will represent the SSC at the Council's August 14 –17, 2023, meeting in Austin, Texas.

Review SEDAR 81: Gulf of Mexico Migratory Group Spanish Mackerel Operational Assessment

Dr. Lisa Ailloud (Southeast Fisheries Science Center [SEFSC]) presented the findings of the SEDAR 81 Operational Assessment of Gulf of Mexico Migratory Group Spanish Mackerel. SEDAR 81 resolves several concerns from the previous model (SEDAR 28 2014¹), and incorporates updated recreational landings data calibrated to the Marine Recreational Information Program's Fishing Effort Survey (MRIP-FES). The model start year has been adjusted to 1986 to correspond to the data-rich period of landings data, with the recreational fleet split into its separate components (i.e., private, shore, for-hire). The adjustment of the model start year improved model stability. The terminal year for the model is 2021. The Southeast Area Monitoring and Assessment Program (SEAMAP) trawl index has been split into early and late components by year. Two key corrections were applied to the SEDAR 28 model: the maturity function (proportion mature at age) and the minimum size limit time block. Most of the removals come from the private and shore recreational fleets, with most of the composition data (length and age) coming from the for-hire fleet. The sex ratio remains fixed at 1:1; the weight-length relationship remains unchanged, and the age-length relationship was updated to include 20,000 new otoliths. Using a maximum age of 11 years, internal Lorenzen scaling for natural mortality (M) was used against the Hoenig M estimate of 0.38. Steepness remains fixed at 0.8.

Commercial landings increased over time until gillnetting in Florida was prohibited, after which commercial landings decreased considerably. Commercial vertical line and gillnet landings both follow a similar trend, with the coefficient of variance (CV) about the commercial landings fixed at 0.01, indicating that the commercial landings data are assumed to be known with great precision. Commercial discards were assumed to be zero for the gillnet fleet, and a 10% discard mortality rate assumed for the vertical line fleet. The discard fraction (discards / total landings + discards) for the vertical line fleet was 9% on average.

Overall, the transition to MRIP-FES resulted in higher landing estimates than with MRIP-Coastal Household Telephone System (CHTS). Recreational landings used CVs of 0.1 to 0.5 depending

¹ <https://sedarweb.org/documents/sedar-28-stock-assessment-report-gulf-of-mexico-spanish-mackerel/>

on fleet, indicating variable but comparatively high uncertainty compared to the commercial landings. Data corrections were applied when CVs exceeded 0.5 for a fleet in a year by replacing that value with the mean of the neighboring two years. Recreational landings have generally increased from 1986 – 2019, with a drop in 2020 and 2021. The majority of recreational discards come from the shore mode. Discard mortality is set at 20% for the recreational fleets. Due in large part to the high uncertainty about the recreational discards, sensitivity runs testing 40% and 60% recreational discard mortality were not influential on model results. Recreational discards were not observed to be constrained to the minimum size limit, with some discards including larger fish. An SSC member asked if the proportion of landings coming from the different recreational fleets was also reflected in SEDAR 28, or if it was a product of changing recreational landings data over to MRIP-FES. Council staff examined the landings from SEDAR 28, and the shore mode landings therein tended to be 10-30% higher than the private recreational landings, albeit following a similar trend. The SSC also asked if the decline in landings during 2020 and 2021 could be a result of COVID-19 pandemic lockdown, but this remained undetermined given that fishing effort increased at the same time.

Shrimp discards were updated relative to fleet effort through 2020. A super period approach was used due to the high uncertainty of the data. Commercial length composition data showed a shift in data coming from the Florida gillnet fleet to Alabama, following the Florida gillnet ban in state waters. Age composition data are conditional on length, with strong cohorts in 1991, 1995, 2001, 2004, 2009, 2015, and 2019. Length composition data for the recreational fleets show similar length composition between the private and for-hire fleets, and smaller fish for the shore mode. Most length samples for the recreational fleets came from the headboats. Similar cohort patterns were detected in the residuals for the recreational fleets as for the commercial fleets.

Catch per unit effort (CPUE) indices were discussed, with the historic recreational index dropped due to a low proportion of successful trips. The commercial vertical line CPUE index increases from 1986 to the mid-2000s, and is relatively flat thereafter.

An SSC member noted the majority of Spanish mackerel landings seem to come from the recreational shore mode, and asked if that trend was also present in SEDAR 28 or if it could be a result of the transition to MRIP-FES.

Another SSC member asked about the weighting of the indices and if these were assigned differently. Dr. Ailloud responded that only the commercial CV were adjusted to match the minimum CV of the fishery independent survey. An automated re-weighting approach was evaluated but it increased uncertainty.

Dr. Siegfried asked what the SSC would like to see about the recreational data, specifically about the CVs for the specific recreational fleets between SEDAR 28 and SEDAR 81. An SSC member asked whether there were consistent or cyclical landings by state, and the number of intercepts that are coming from the shore mode for the states, to determine the degree to which the shore mode landings are plausible. Dr. Siegfried noted that accounting for spatial patterns in landings would not be able to be directly incorporated into the current model framework, but could be considered by the SSC in considering catch limit recommendations and reflected in the uncertainty. The SSC member thought it interesting that shore mode would become such a dominant source of landings

compared to the last assessment. Another SSC member recalled the shore mode landings from gray snapper (SEDAR 75 2023), and the volatility of those landings therein.

Fits to commercial landings were precise ($CV = 0.01$), with more uncertainty about fits to recreational landings, and especially shore mode landings. The commercial gillnet fleet selected for smaller fish than the commercial vertical line fleet. Recreational private and for-hire selectivities were similar, with the shore mode knife-edged at the minimum size limit. The SEAMAP surveys selected for the smallest fish. The predicted mean age landed by fleet was 3-4 years for gillnet; 2 years for handline in the early part of the fishing season, and 4 years for late; 2-3 years for the for-hire and private vessels, and 2 years for the shore mode. Recreational discards generally fit within the annual CVs, as did fits to fishery-independent indices (CPUE, SEAMAP). SEDAR 81 estimated a more gradual decline in discard ages than SEDAR 28, with more of the discard age composition consisting of older fish compared to SEDAR 28. Overall, shrimp discards account for a small fraction of the total removals, especially compared to the recreational private and shore modes. Recruitment deviations are cyclical about the mean. Exploitation by the shore mode has increased substantially since 2011, while the effect of shrimp bycatch has become considerably less influential with time (the latter in contrast to that estimated by SEDAR 28). Commercial exploitation is a small fraction of recreational exploitation. By comparison, SEDAR 81 shows a smaller fraction of unfished biomass compared to SEDAR 28.

An SSC member asked about the lag between recruitment events and spikes in the shore mode landings. The SSC member and Council staff noted a mismatch between recruitment events and these spikes, calling into question the shore mode data and whether there was a regional effect or something else related to MRIP shore sampling. The SSC member also noted the poorer fits and differences in fits between the early and late SEAMAP indices. Dr. Ailloud replied that the data from the SEAMAP indices were sparse, and thus poorer fits, given the CVs, were not unexpected there. Another SSC member thought that there has been a change in the fishery since 2010; whereas the recreational fishery was previously balanced between the shore and private vessel modes, it now appears that the shore mode has grown dramatically by comparison since 2010. Combined with the previously noted effect of effort extrapolation by MRIP-FES for shore mode for other species, the signal from shore mode merits further investigation.

Dr. Ailloud described model diagnostics, which demonstrated a relatively well-behaved base model. Retrospective analyses did not show any patterned change in the terminal year estimate of stock condition. The jack-knife analysis showed sensitivity to the SEAMAP indices (shifts estimate higher) and commercial vertical line data (shifts biomass lower), with the base model (which includes both) splitting the difference. A hindcasting cross-validation analysis showed that neither the commercial vertical line CPUE, nor the SEAMAP larval “late” index, are a good predictor of stock biomass. An SSC member did not expect great fits to the fishery-independent data, especially given the flat trend, but was curious about the deviations in that analysis. Dr. Ailloud hypothesized a driver in the length composition data or elsewhere, but that more investigation was needed. She added that even SEDAR 28 noted the unreliable nature of these two indices, and that they essentially cancel each other out in the base model. Another SSC member asked about the absence of the increasing pattern in spawning stock biomass (SSB) from SEDAR 28 in SEDAR 81. Dr. Ailloud thought the signal in SEDAR 28 was being driven by the recreational data therein (MRFSS), which disappears in the new MRIP data in SEDAR 81. An

SSC member asked about the state-specific landings data, and whether those data had been considered. Dr. Ailloud noted many gear changes to the gillnet fleet over time by state, which confounded those data to some degree. Also, the vertical line index is based only on positive trips, and the response variable is the number of fish per trip, which doesn't account for trip duration. She thought these indices could be improved in future iterations, as could spatiotemporal evaluations of the SEAMAP indices.

Dr. Ailloud showed the profiling of steepness, which due to no defined stock recruit relationship, was relatively flat. Allowing steepness to be estimated resulted in a value of 0.85, and scaling steepness up or down concurrently scales SSB up and down. The model is sensitive to the estimate of M , with the sensitivity run of $M=0.49$ resulting in a near doubling of the unfished biomass compared to $M=0.38$ (base model estimate). An SSC member asked whether it would be more appropriate to apply the Hamel and Cope (2022²) approach to M in future assessments. Dr. Ailloud replied that the combination of the larger data set and the more statistically appropriate approach in Hamel and Cope was worth investigating compared to previous approaches, as it was less sensitive to bias related to max age.

Dr. Ailloud reviewed the differences in estimates from MRIP-CHTS in SEDAR 28 and MRIP-FES in the same model, which showed an increase in the difference in the projected overfishing limit (OFL) at a fishing mortality rate corresponding to a 30% spawning potential ratio ($F_{30\%SPR}$) from a 20% increase using MRIP-FES in 2013 to a 39% increase in 2019. Projections use the average relative fishing mortality, selectivity, and retention from 2019 – 2021, and recruitment is model-derived. Interim landings use the actual landings data for 2022, and a three-year average of 2020 – 2022 for 2023 and 2024. Shrimp bycatch is fixed at 0.06, and no sector allocations are used. As of 2021, Gulf Spanish mackerel is not overfished (SSB_{2021} is greater than the minimum stock size threshold [1.34; or, greater than 1], but SSB_{2021} is below SSB at MSY), and is not experiencing overfishing ($F_{2019-2021}$ is less than the maximum fishing mortality threshold [0.93; or, less than 1]). The stock may have been overfished prior to 2000 and briefly in the 2010s, and overfishing may have been occurring in the 1990s and 2010s.

Fisherman Feedback

Council staff presented the results from the Council's stakeholder engagement tool to capture perceptions about the current status of a stock. A total of 117 responses were gathered from April 14 – May 19, 2023. The majority of the respondents were from the private recreational sector, and the majority of the answers came from Pensacola, Florida and Alabama area. Over 50% of the comments received were negative in nature, followed by neutral comments. Staff noted a spatial trend with comments being more negative in the eastern versus western Gulf. An SSC member asked if the recreational data could be separated into shore versus private vessel. Staff responded that question was not included, but that the assumption is that the majority of recreational respondents are offshore fishing. Staff also noted that among the negative sentiment, there were concerns about stock decline, shark depredation, and reduction of forage species.

An SSC member encouraged staff to use a randomized sampling method and not allow the participants to self-select a sector to see if the results are the same. Staff commented that it would

² <https://www.sciencedirect.com/science/article/abs/pii/S0165783622002703?via%3Dihub>

be a good idea, but that there are limitations on how to use the tool due to the Paperwork Reduction Act.

An SSC member asked about the maximum sustainable yield (MSY) value corresponding to the fixed steepness value of 0.8. Dr. Ailloud said she could provide that value later in the meeting. The SSC member noted similar challenges for SEDAR 81 as in SEDAR 28, with regard to estimating reproduction, landings, and with fishery-independent indices. They added that for some species, it may be necessary to manage expectations with regard to the quality and quantity of data which may be available for some species. Another SSC member asked about concurrent assessments between the Gulf and Atlantic migratory groups. Council staff described the boundaries between the migratory stocks, and noted that the migratory groups do not need to be assessed concurrently. An SSC member from Texas discussed data that indicate Texan anglers are not targeting Spanish mackerel as much as in past years. Another SSC member noted the decline, and the large difference between the annual catch limit (ACL) and the landings for Spanish mackerel. The SSC member asked about the comments heard at Council meetings, and whether they indicated a trend. Council staff recalled the negative impression of the stock by a majority of respondents to the Fisherman Feedback tool, as well as negative comments received about king and Spanish mackerel during public testimony. An SSC member commented on the mismatch between perceived cohorts coming into the fishery and the spikes in the shore mode landings. Another SSC member recalled recorded examples of expansion and contraction of Spanish mackerel in response to environmental drivers, which weren't available to be included in this stock assessment. They added that there were substantial data limitations for SEDAR 81, and that recommendations should be made with that fact in mind. Council staff commented that it was unlikely that an interim analysis would be possible for Spanish mackerel, given the reliability of the indices.

Motion: The SSC accepts the SEDAR 81 Gulf of Mexico Spanish Mackerel Operational Assessment as consistent with the best scientific information available. Under the current MSY proxy of $F_{30\%SPR}$, the assessment indicates the stock is not overfished and not overfishing as of 2021.

Motion carried without opposition.

Discussion: SEDAR 81 Evaluation and Projections

Dr. Ailloud noted that the interim years assume the actual landings data for 2022, and a three-year average of 2020 – 2022 for 2023 and 2024. This is because modifications to fisheries management resulting from SEDAR 81 are not expected until 2025. An SSC member thought it might be appropriate to consider a 6-year average for 2023 and 2024 instead of a three-year period. SSC members thought the issue might be that because MRIP is a general survey covering many species, it is unlikely to be specific to any single species. It may be that Spanish mackerel is not well-covered by MRIP, as evidenced in the CVs for the recreational data and the lack of composition data coming from those landings. However, by incorporating the new MRIP-FES estimates, the productivity of the stock is also projected to have increased with the landings. Some SSC members continued to express concern that there was, and historically had been, such a large

difference between the ACL and the landings. An SSC member asked about the source of the surplus production in the fishery resulting in such large catch limits, especially since rapid increases in biomass are not evident. Dr. Siegfried demonstrated the stock's performance against MSST and MFMT, noting that instances of overfishing did not always lead to the stock having been historically overfished. Some SSC members thought the productivity of the stock may be overestimated. An SSC member thought recreational discards may be contributing; although, discards were noted to be poorly estimated. Another SSC member thought the SSC could denote to the Council the issues within the assessment and its concerns about those issues, and encourage the Council to be considerate of that when evaluating how to revise the ACL for Spanish mackerel.

Council staff said that the behavior of the Kobe plot was peculiar, because in the initial year (1986) the stock was undergoing overfishing, and continued to be for several years, during which the biomass seemed to continue to increase. This seems counterintuitive. Dr. Siegfried replied that it may be that those removals were focused on the less fecund portion of the biomass. An SSC member suggested using either a three-year average of 2017 – 2019 for the interim years, or a six-year average using 2017 – 2022. This would result in a modification to the projected catch limits by increasing the assumed landings in the interim years. In support of the modified three-year period, the SSC member stated that the landings were depressed despite increased effort, and without an ability to describe why, it may be appropriate to exclude those data from informing the projections in this way.

Motion: The SSC recommends using the mean of the landings from 2017 – 2019 as the proxy for the interim projection years of 2023 and 2024.

Motion carried 9 – 4, with 4 abstentions and 7 absent.

Update and Discussion on MRIP Cumulative Estimate Reporting

Dr. Richard Cody (NOAA Office of Science and Technology [OST]) provided a presentation outlining a cumulative approach to reporting private recreational landings estimates. To align with standardized best practices, OST is cumulatively adding landings data every two months to improve estimate precision. Wave-specific recreational landings data may still be requested from OST, but will no longer be immediately publicly available.

Several SSC members expressed concern for the proposed approach. They stated a desire to decrease uncertainty and improve precision in recreational landings estimates. However, the SSC stated that masking imprecise estimates by aggregating landings was not the optimum approach. Instead, the SSC encouraged OST to investigate how the MRIP survey design may be contributing to the uncertainty of the estimates. A few SSC members suggested that small sample size and/or the spatial distribution of survey samples could be driving the observed high coefficient of variations for the landings estimates. An SSC member supported the OST proposed next step to work with SEFSC and SERO staff to develop a protocol for addressing survey outliers.

Dr. Cody agreed with the SSC's statements. He indicated that the Gulf state agencies have expressed interest in helping review situations where outliers were identified. Dr. Cody continued

that MRIP was designed to be a broad survey to achieve the data needs of Gulf-wide stock assessments, and that the state supplemental surveys compliment MRIP by providing a smaller regional scale of inference. However, the Gulf states have differing methodologies while MRIP's methodology remains consistent across the survey. Dr. Cody continued that, for stock assessments, MRIP can be interpreted as a data source that has been consistent over time and that the estimate outputs are reflective of that design.

That said, Dr. Cody indicated that there was nothing to preclude assessment scientists the ability to analyze the data in different ways. He indicated that there are options to “weight trim” (i.e., to iteratively adjust sample weights and prevent unusual or highly uncertain values to cause outlier-like estimates) some problematic point estimates if a determination has been made that it would be necessary to do so. However, that weight would have to go somewhere and can be difficult to account for after the modification has been made. He also stressed the importance of incorporating other data sources (changes in fishing behavior etc.) in providing context for landings estimates.

Discussion: Technical Guidance for National Standard 1 Reference Points and Status Determinations

Dr. Richard Methot (NOAA Headquarters) provided updated technical guidance for National Standard 1 on reference points and stock status determinations under the Magnuson-Stevens Fishery Conservation and Management Act. There has been substantial research over the last 25 years on the scientific basis for reference points and their expected performance in the management of sustainable fisheries, and substantial experience gained from 25 years of stock monitoring and stock assessment implementation. Research includes: methods regarding management strategy evaluation; evolution of integrated analysis assessment methods; development of methods to provide advice for data-limited stocks; development of additional ecosystem-based fishery management tools; and, investigation of changes in productivity due to regime shifts and climate change.

Dr. John Froeschke (Council Deputy Director) asked for clarification on best approaches for setting catch advice for stocks where recent recruitment has been observed to decline, indicating a possible regime shift. Dr. Methot replied that any determination of a regime shift, based on a few recent years of recruitment, should be approached cautiously. This is because once there is a decreased shift in a biomass benchmark, it may result in a situation where they stock may present a robustness to current fishing levels that is not, in fact, sustainable. He recommended instead focusing on long-term effects when considering a possible regime shift.

The SSC asked if the report had any guidance on considerations for %SPR. Dr. Methot stated that while MSE approaches could help address this issue, they tend to be broad and not focused on reference points. He highlighted the difficulty in separating the effect on the reference points and on management targets. Usually, targets are set below limits and caution needs to be taken when building that through an MSE. Similarly, there are challenges when considering only biological yields of the stock (MSY) with OY which incorporates ecosystem and economic factors. Generally, MSE approaches have focused on OY factors.

Another SSC member inquired what data were required and what approaches would be recommended when trying to incorporate temporal density-dependent considerations directly in a stock assessment and provided red snapper as an example. Dr. Methot replied that there was a body of research to suggest density-dependent response for red snapper. He indicated that density-dependent parameters could be included in SS3. He continued that, at the moment, the stock recruitment relationship was mostly used within SS3 to assess demographics of a population over time but that density-dependent age-at-maturity, size-selective fishing, and multi-species effects could also be accounted for within the model.

Public Comment, July 19

Capt. Bob Zales II:

- He has seen the Spanish mackerel population fluctuate along with changes in fisheries management since its implementation in the late 1980s, but the management didn't match the population status.
- Although he considers the current status of the Spanish mackerel fishery to be healthy, he thinks the SSC made arguments in their discussion against their vote of acknowledging the stock assessment as best scientific information available. He has not seen a comparable rise in catch and effort on for-hire boats compared to shore-based fishing and he attributes this to ongoing MRIP-FES issues.

Discussion: SEDAR 81 Evaluation and Projections (continued)

Dr. Ailloud reviewed updated projections based on the previous SSC motion. She also noted that the predicted F_{MSY} based on model settings was at 29% SPR; thus, using a proxy of $F_{30\%SPR}$ was just slightly more conservative. The new OFL projections trend down towards the SSB_{MSY} target, and the Acceptable Biological Catch (ABC) trends up towards the F_{MSY} target. The SSC asked why the OFL is represented by a declining yield stream, and the ABC an increasing one. Dr. Ailloud replied that it is because the SSB is projected to be slightly below the SSB_{MSY} in 2022, and because the projected harvest in the 2023 and 2024 interim years is below that which would deplete the stock compared to the ABC.

Motion: The SSC sets the OFL for Gulf Spanish mackerel based on SEDAR 81 and the revised projections, using a constant catch of 12.074 mp ww for 2025 – 2027.

Motion carried without opposition and with one abstention.

Motion: The SSC sets the ABC for Gulf Spanish mackerel based on the SEDAR 81 revised projections, using the yield at 75% of $F_{30\%SPR}$. The constant catch for 2025 – 2027 is 9.630 mp ww.

Motion carried without opposition and with one abstention.

Evaluation of Interim Analysis Process, Part 2

Dr. Katie Siegfried (SEFSC) presented an updated presentation on the interim analysis process, which was first presented to the SSC in May 2023. With respect to using buffers or a number of years to average an index, the SEFSC recommends considering index noise and the life history of a species before deciding. If stable catch is the goal, choose longer averages or larger buffers. If quicker responses to changes or episodic mortality is a management goal, smaller buffers or shorter averages will be nimbler. Dr. Siegfried noted that the number of years a trend continues, up or down, should be investigated; especially if a decline is observed, to avoid an overfished condition. She added that the level of conservatism should also consider whether the species is in a rebuilding plan. An SSC member asked if there was an alternative way to determine whether an index was valuable, besides just the uncertainty. Dr. Siegfried replied that management strategy evaluation (MSE) could be used to determine which indices are good indicators of stock health, but that process is very time-intensive. Also, the SEFSC can use Stock Synthesis to evaluate the predictive power of an index. Another SSC member mentioned just updating the catch in a model and re-running the model to update catch advice (e.g., 2022 SEDAR 64 Interim Analysis³). The SSC member added that there needs to be a method for capturing the uncertainty in a trend, regardless of the age class that index is tracking. The SSC discussed the differences in effects with using longer-term averages, which provide stability for the commercial sector, but could result in occasional ACL overages for the recreational sector depending on interannual variability in stock abundance compared to the catch limits.

When multiple indices may be available for use in an interim analysis, the SEFSC would ideally like to test each index in an MSE to determine which is appropriate, but that effort is resource-intensive. Other factors like index processing time and low sample sizes in some years require the best judgement to be applied. Dr. Siegfried continued that some special issues can arise unexpectedly based on changes to perceptions of stock health, which can disrupt otherwise routine analytical work. She elaborated on processing times and when certain indices would be expected to be available for use in an interim analysis. In discussing for how long interim analyses should be used, Dr. Siegfried noted that episodic mortality could be limiting (e.g., red grouper). Also, only a stock assessment can modify stock status. She added that large changes in an index or landings might necessitate a more in-depth examination of stock health.

Dr. Siegfried said that the OFL and ABC for a stock can be updated in an interim analysis, assuming that F_{MSY} or its proxy is steady and that only the biomass has changed. Also, while health checks can help prioritize which stock assessments to conduct next, the SEFSC recommends examining updated catch advice instead. Interim analyses run as health checks or to generate updated catch advice require a nearly identical amount of work. The SEFSC is working towards automating many of the interim analyses, once the representative index is identified and the analytical method is set for a species. This would allow an interested party to examine a species at will.

³ <https://sedarweb.org/documents/2022-interim-analysis-of-sedar-64-se-us-yellowtail-snapper/>

An SSC member commented on the importance of supporting information when the index doesn't seem to be explanatory enough of how the stock is changing. An example using red grouper was offered, whereby the NMFS Bottom Logline index was relatively flat but landings had increased. The discrepancy there was that the selectivities of the recreational fleet selects for smaller, younger fish than the NMFS bottom longline survey. Another SSC member cautioned about the disconnect between the population dynamics from the stock assessment and the interim analysis process. The SSC member thought there was value in re-running the stock assessment with updated landings to be able to continue using established population dynamics parameters. Dr. Siegfried asked about fixing other parameters that normally require more composition data (e.g., selectivity and retention). The SSC did not see an issue with fixing those parameters to complete such an analysis, so long as the previous management measures had not changed in such a way that would result in assumptions about those parameters being violated. Other SSC members thought this approach was more defensible for modifying catch advice compared to the current interim analysis approach.

Council staff recalled that the interim analysis tool has been used several times in the Gulf. The Council has a goal of reducing the time between the terminal year of the science and the date when management modifications are implemented, via the Council's regulatory streamlining proposal. Council staff encouraged further automation of the tool, acknowledging the resource limitations in the Gulf for conducting and reviewing more assessments. Some species may be well-represented by a single index, where others may require more information to be present before making recommendations about catch limit modifications. Mr. Kevin Anson (Council Representative) asked if the SEFSC could provide a list of candidate indices for commonly assessed species. Dr. Siegfried replied that candidate indices are available for some species, and that the SEFSC has created tiers of analytical tools depending on the work required. An SSC member discussed past studies which have examined differences between full age-structured assessments and index-based analyses, and found minimal differences in the precision and quality of the resulting advice⁴.

The SSC debated the future use of interim analyses against the needs for informing management advice and the availability of data. If a health check is all that is requested, then the SSC might consider assessing changes in trend in the index as opposed to the complete interim analysis. If the trend is moving one way or another, then the SSC could advise the Council on as much and the Council could take proactive steps ahead of a stock assessment.

Review: Gulf of Mexico Migratory Group King Mackerel Interim Analysis

Dr. Francesca Forrestal (SEFSC) reviewed the Gulf king mackerel interim analysis, which examined the SEAMAP fall groundfish survey and the SEAMAP fall plankton survey as candidate representative indices of relative abundance. In some recent years, either the surveys were not conducted (2020, plankton survey) or did not interact with any king mackerel. Dr. Forrestal described the use of three- and five-year moving averages to each index, and the effect on the recommended catch advice coming from both indices. For the plankton survey, catch would be adjusted down almost 50% for the three-year average, and down a little more than 10% for the

⁴ https://gulfcouncil.org/wp-content/uploads/11d.-Klibansky_etal_2023_May_GMex_SSC_Meeting.pdf

five-year moving average. For the groundfish survey, catch would be adjusted down by almost 90% for the three-year average, or about 50% down for the five-year moving average. These two indices track age-0 and age-1 king mackerel, and so are observing fish not being observed by the directed fleets; however, these indices can be used to examine trends in recruitment. Dr. Forrestal recalled the lower landings of king mackerel for both fishing sectors for the last two fishing years.

The SSC recognized the shortcomings of both indices, especially given the sparse data in recent years. Council staff described the landings of Gulf king mackerel by sector. Mr. Anson suggested looking at the number of commercial trips occurring for king mackerel and the landings per trip. Council staff discussed possible negative effects to the historical traveling hook and line fleet that used to base its operations out of Grand Isle, Louisiana, which was decimated by a hurricane in 2021. Further, until the last two fishing years (2021 – 2022, 2022 – 2023), the commercial handline fleet routinely caught all of its quota. An SSC member asked about the accuracy of identifying king mackerel down to the species in the plankton survey, which was noted to have sampled ever fewer stations from the 1970s to present, possibly due to equipment limitations. Another SSC member commented that the plankton taxonomy is performed in Poland, and the samples are collected from fixed stations. An SSC member thought it would be useful to examine landings from Mexico and see if similar trends are being observed there. Another SSC member replied that the Gulf of Mexico Large Marine Ecosystem project will provide funds to support the Mexican government's participation in a regional stock assessment of king mackerel with the United States. An SSC member suggested using adult biomass as a measure of SSB in the next assessment.

Recognizing the declining trend in both indices and the sparse data in recent years, the SSC did not think it had enough data to recommend revising the current catch limits. An SSC member remarked that king mackerel off Texas can still be found, however, they are simply not as desirable by anglers as in previous years. Dr. Siegfried added that the last king mackerel assessment found the SSB to be between MSST and SSB_{MSY}, indicating that while not overfished, the stock was not fully healthy. She added that although the SEFSC could not recommend one index over another, the additional consideration of recent trends in landings should be considered when determining how to move forward in the short-term.

Other Business

SEDAR 85 – Gulf Yellowedge Grouper

Dr. Siegfried noted that some considerable changes from the last stock assessment on Gulf yellowedge grouper (SEDAR 22 2011⁵) will be necessary for SEDAR 85. Dr. Skyler Sagarese (SEFSC) described SEDAR 22 as the first Stock Synthesis model developed at the SEFSC, noting that since then, 12 years of additional data are now available, along with considerable advances in data management, processing, and modeling best practices. Dr. Sagarese noted that the commercial fishery is responsible for most of the landings, and that SEDAR 22 was configured to fit the landings exactly; however, misidentification issues can arise with yellowfin grouper, and

⁵ <https://sedarweb.org/documents/sedar-22-final-stock-assessment-report-gulf-of-mexico-yellowedge-grouper/>

there are high landings of unclassified groupers. Sex-specific length and conditional age-at-length compositions were fit in the SEDAR 22 model, with sex determination based on both histological (recommended) and macroscopic identification (less accurate, and used previously), with most years not meeting current sample size cutoffs. Data inputs have also changed between assessments. Hermaphroditism was previously modeled as the proportion of individuals transitioning at a given age using a scaled cumulative normal distribution, with an asymptote of 1 if all females have transitioned by the plus group. SEDAR 22 estimated that only 7% of females transition by age 40. This age at transition can be estimated in Stock Synthesis, but sex-specific data are limited, especially if assigned histologically.

Dr. Sagarese explained several proposed changes to the SEDAR 85 model:

- Use landings as provided based on updated methodologies (e.g., commercial improvements, MRIP-FES)
- Switch F method and incorporate uncertainty in landings
 - F as parameters approach commonly used for Gulf reef fish
 - Including annual uncertainty estimates where possible
- Remove sex-specific composition data and use as provided based on updated methodologies and QA/QC
 - Need to develop compositions for all data combined (male, female and unknown sex) – requires some extra time

With the new data and configuration, there are more data from some data streams that may affect selectivity functions. Further, better accounting of uncertainty in landings better reflects the landings history, which is a more realistic way to capture those trends. Dr. Sagarese asked the SSC whether the SSC was comfortable allowing the SEFSC to proceed and have the SSC review the final product, or, would the SSC like to convene an ad-hoc panel to evaluate these issues. Drs. Jim Tolan, Dave Chagaris, and Jim Nance volunteered to serve on a topical working group to help the SEFSC address these issues with SEDAR 85.

Public Comment, July 20

Capt. Bob Zales II:

- Noted the king mackerel stock certainly is not what it used to be historically but he is still questioning the stock status. He considers the stock to be cyclical in nature but only recently is the first time in many years that he has had three years of not being able to catch them. He also has noticed lack of baitfish in the last three years. However, this year he has noticed more baitfish and the king mackerel stock seems to be healthier. He recommended examining all aspects of the fishery such as genetic differences, environment, and the complexity of the stock(s) when making management decisions.

The meeting was adjourned at 2:30 pm eastern time on July 20, 2023.

Meeting Participants

Standing SSC

Jim Nance, *Chair*

Luiz Barbieri, *Vice Chair*

Harry Blanchet

David Chagaris

Doug Gregory

David Griffith

Paul Mickle

Trevor Moncrief

Will Patterson

Dan Petrolia

Steven Scyphers

Jim Tolan

Richard Woodward

Special Reef Fish SSC

Jason Adriance

Mike Allen

John Mareska

Special Ecosystem SSC

Mandy Karnauskas

Josh Kilborn

Steven Saul

Special Socioeconomic SSC

Luke Fairbanks

Cindy Grace-McCaskey

Jack Isaacs

Council Representative

Kevin Anson

[A list of all meeting participants can be viewed here.](#)